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INTERACTIVE LEARNING ENVIRONMENTS, 2015
http://dx.doi.org/10.1080/10494820.2015.1128214

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Technology-enhanced learning and co-operative practice against the neoliberal university

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ABSTRACT

Neoliberalism is a global pedagogical project aimed at the dispossession of free time so that all of life becomes productive, and education is a central institutional means for its realisation. This project aims at marketising all of social life, so that life becomes predicated upon the extraction of value. In part the deployment of technologies, technical services, and techniques enables education to be co-opted as an institutional means for production and control. This occurs inside both formal and informal educational institutions and spaces, like universities and Massive Open On-line Courses, as one mechanism to offset the tendency for the rate of profit to fall and to re-establish accumulation. This pedagogic project also tends to recalibrate and enclose the roles of staff and students as entrepreneurial subjects, whose labour is enabled through technology. This is achieved through learning analytics, big data, mobility and flexibility of provision, and so on. At issue is the extent to which this neoliberal project can be resisted or refused, and alternatives described. This article will analyse the relationships between technology, pedagogy, and the critical subject in the neoliberal University, in order to argue for the use of technology inside a co-operative pedagogy of struggle. This demands that we ask what education is, before we ask what it is for, or the place of technology-enhanced learning in the university. The article considers whether it is possible to uncover ways in which education might be used for co-operation rather than competition, and what technology-enhanced co-operative education might look like?

ARTICLE HISTORY
Received ■
Accepted ■

KEYWORDS
Co-operation; higher education; neoliberalism; technology-enhanced learning; university

Introduction

There has been an increasing consideration of the impact of the politics of austerity on the idea of the University in the global North (Deem, Mok, & Lucas, 2008; Hoofd, 2010; Neary, 2012; Roggero, 2011; Thorburn, 2012), including the place of technology-enhanced learning (TEL) in that idea. Critiques have emerged of the implementation of techniques for efficiency and value-for-money such as out-sourcing and labour arbitrage; internationalisation agendas and the role of Massive Open On-line Courses (MOOCs); the impact of knowledge transfer and the commercialisation of research; the use of secondary legislation by governments to open-up a higher education market; and the effect of fees on the relationships between teachers and students (Deem, Hillyard, & Reed, 2007; McGettigan, 2013; Newfield, 2013). One outcome of this range of techniques has been a restructuring of the idea and reality of the University as a public or private good, and the extent to which the sector or individual institutions should be publically funded, regulated, and governed (McGettigan, 2012; Williams, 2012).

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In its broadest sense, this process reveals a systemic attempt by national governments acting transnationally to stabilise the processes of capital accumulation, and to renew growth (Cleaver, 1993; Harvey, 2010). However, such a discourse also highlights an opportunity to develop lasting critiques of the mechanics of capitalism, its social relations and organising principles, and as a result its use of education and technology. This is particularly the case given the range of global ruptures that currently infect capitalism, including the ongoing student and teacher protests in Chile, Kenya, Mexico, Nigeria, Quebec, and elsewhere (Edufactory, 2012). Through these ruptures, the structuring realities of capitalism as a historically situated, global system of domination can be revealed as a form of human unfreedom (Postone, 2005). Postone argues for a response to be developed based upon Marx's critical theory of capitalism

> which is centrally concerned with the imperatives and constraints that underlie the historical dynamics and structural changes of the modern world. That is, rather than deny the existence of such unfreedom by focusing on contingency, the Marxian critique seeks to uncover its basis and the possibility of its overcoming. (Postone, 2005, p. 70)

By understanding both the historically and the socially constructed nature of the objective relations of capitalism, and "the systemic constraints imposed by capital's global dynamic on democratic self-determination" (Postone, 2005, p. 79) it becomes possible to deliberate alternatives. However, these alternatives also need to be debated in the face if the lived realities of their emergence inside capitalism, so that it becomes possible to recognise "human social production has been accomplished through ongoing historical injustice" situated in forms of expropriation and alienation that deny human sociability (Wendling, 2009, p. 33).

Thus, educators can for example question how their technologically mediated labour is being used inside a politics of austerity through an analysis based on critical theory. Is it possible to use the implementation of TEL in the University to reveal the mechanics of expropriation and alienation and to develop alternatives? As Cleaver (1993) writes about this secular crisis of capitalism, it is crucial that we crystallise the multitude of "antagonistic forces and trends which are inherent in its social structure and which persist through short term fluctuations and major restructurings," so that we are able to delineate "the study of the struggles for liberation from the constraints of capitalism as a social system."

Thus, this article analyses the structuring forces through which TEL is co-opted inside the University for the valorisation of capital, including through an entrepreneurial curriculum turn, and through the subsumption of the University inside cybernetics. This co-option is deliberately analysed as taking place within the neoliberal, transnational political project outlined above. The article then describes alternative, co-operative endeavours that are inside-and-against those extant mechanisms, and which are predicated on different, social organising principles for the use of technology inside the University. As Winn (2013) has noted this demands that educators and students think dialectically about the relationships between Capital, the University and technology, in order to

> recognise that a post-capitalist university would be developed *out of the conditions of possibility which the existing university has produced* … What is required is the *overcoming* of the capitalist modes of valorisation. (Winn, 2013)

Central to this dialectical approach is grounding the realities of competition and co-operation inside the University.

A note on co-operation and critical theory

In terms of our understanding of co-operation, Clarke (1979, 1990) uses critical theory to reflect on its relationship to the concept of value, which is characteristic of a society in which social relations emerge between independent producers regulated through market-mechanisms. For Marx (2004), this has *both* an economic, quantitative form that emerges from the processes of accumulation, *and* a social, qualitative form that underpins class struggle. In part this struggle takes the form of

the ownership of labour and the mechanisms through which labour-power is reduced to a wage. However, it also enables us to situate technological innovation as it emerges from class struggle, and in particular the ways in which Capital seeks to drive efficiencies in production and consumption, to extract rents for services, or to control or monitor labour.

Revealing Capital as value-in-motion, as a system able to expand itself through the logic and dynamics of competition, or as "self-valorising value," enables a richer analysis of the technological mechanisms through which this expansion takes place. These mechanisms apply as much to the development of TEL inside the University as they do to any other competing business or sector of the economy. Marx (2004) treats co-operation as the logical foundation and the historical starting point of capitalist production. It is the point of departure for manufacturing through the real subsumption of labour inside the factory. Thus, Marx (2004, pp. 440–441) demonstrates how capitalists used co-operative practices to even out the differences between individual workers and to give labour a "socially average character." Moreover, co-operation in the manufacturing process is focused around capital intensity, delivering economies of scale, and reducing the costs of production, as well as driving efficiencies through changes to the labour process (Basu & Vasudevan, 2011).

Co-operation rooted in capitalist production processes is thus predicated on competitive advantage, and this makes the subjection of labour to capital a "real condition of production" (Marx, 2004, p. 448). Moreover, the productive power of collective labour appears to be a "productive power inherent in capital" (Marx, 2004, p. 451). As a result, co-operation is the fundamental form of the capitalist mode of production and within the technologically mediated factory this enables: new forms of the division of labour; the deskilling of labour through mechanisation; the domination of man by the machine and by time; and the separation of mental from manual labour (Marx, 2004, pp. 542–553). Technology-driven co-operation forms a weapon in the struggle of Capital against Labour.

Educators might then analyse how their labour is technologically mediated and commodified, in order to ask whether it is possible to describe forms of social, academic co-operation that might overcome the alienation inherent in capitalism and thereby liberate human subjectivity? Do the realities of academic labour as a function of the valorisation process mean that it is impossible to imagine alternatives, however co-operative in nature they may be? Can co-operation help educators and students overcome the realities of accumulation by dispossession, which separate "the workers and the ownership of the conditions for the realisation of their labour" (Marx, 2004, p. 874)? A starting point, as Marx (2004, p. 724) highlights is to reveal the structures inside which co-operation occurs.

> The capitalist process of production … seen as a total, connected process, i.e. a process of reproduction, produces not only commodities, not only surplus-value, but it also produces and reproduces the capital-relation itself; on the one hand the capitalist, on the other the wage-labourer.

In moving towards alternatives, it is important that educators and students are able to describe their labour inside the University as a form of capitalist work, and to delineate the structures that prefigure it. In the current period of capitalism, these structures have been labelled neoliberalism.

Neoliberalism as a global pedagogy of dispossession

In order to situate any discussion of the organising principles for the use of TEL and possibilities for co-operative alternatives, it is important to describe the structural realities of the university-sector in which it is deployed. These structural realities are political and have been described as neoliberalism (Harvey, 2005; Klein, 2007; Lipman, 2009). As a global pedagogical project, neoliberalism aims at the dispossession of free time and space, with education forming a central institutionalised means for its realisation. This project aims at reinscribing all of social life inside the market and for the extraction of value. Ball (2012) analyses both the factors that make-up neoliberalism and the mechanisms through which it is enacted in education. Thus, Ball highlights the following (2012, pp. 3–4).

- Everyday social life, including study and teaching, is reduced to economics, in order to realise new opportunities for profit.
- Governance is reconfigured through an appeal to the entrepreneurial self, with the creation and extraction of value predicated upon individual mobility and connectivity.
- The networked, technological structures that enable neoliberalism are polymorphic and isomorphic, and enable new markets to be opened-up.
- Nation States act in concert with supranational bodies like the International Monetary Fund, the European Central Bank and the World Bank, to impose the transnational control that is demanded for free markets.

According to Ball (2012, pp. 12–13), these factors are spread via transnational advocacy networks of people who are motivated by shared values steeped in marketisation and the private. Tacit or active consent is created throughout civil society through: information politics (the ability to call-up data or evidence quickly); symbolic politics (the ability to tell meaningful, common sense stories); leverage politics (the ability to call on powerful actors); and accountability politics (the ability to use the power of money to bring pressure on political actors) (Deem et al., 2007; Robinson, 2004).

Understanding these processes is critical in describing and assessing how transnational activist networks are working to co-opt education for-profit, using technology as a lever. Examples include: philanthropic groups who sponsor MOOCs in concert with academics (Hall, 2012; Siemens, 2012); publishers like Pearson seeking spaces and services to extract rents for accreditation, content, and learning analytics (Ravitch, 2012); the drive for service-commodification and outsourcing; or the interconnections between learning management system vendors like Blackboard, and the Pentagon, global finance capital like Goldman Sachs, and technology consultants like SRA International (Hall, 2013). Revealing these co-options matters because we are witnessing a recalibration and enclosure of the idea of the student, not as a co-operative, associational subject, but as a neoliberal agent, whose future and the spaces in which s/he can live is increasingly marketised (Institute for Fiscal Studies, 2010; McGettigan, 2012). A growing literature describes how this subject is individuated, enclosed, and disciplined through debt (Williams, 2012), in order that s/he becomes entrepreneurial in her endeavours and outlook (Gove, 2012; Newfield, 2010), precisely because the risk of failure has been transferred from society to the individual.

Against this neoliberal restructuring, the University is a confused space that is being reconstituted around: money in the form of debts, fees, and surpluses; performance management in terms of staffing costs and efficiencies; customer relationship management, in the form of national student surveys and retention data, and so on. A key driver in this process is the reality of competition between universities as competing businesses, or capitals. Driving efficiencies through technology is critical, and TEL forms part of this process.

The cybernetic hypothesis as pedagogic project

In a recent pamphlet on the United Kingdom's higher education reforms, the Minister of State for Universities and Science David Willetts, described a policy space that pivots around money, productivity and data-informed choice (Willetts, 2013).

> Students aren't merely buying a degree, as they might a holiday. They are engaging in something inherently worthwhile and also investing in their future. The paradox is that unleashing the forces of consumerism with more information for prospective students and funding following their choices is the best way of bringing back traditional academic focus on high-quality teaching. (Willetts, 2013, p. 36)

Moreover, the Minister noted the importance of subsuming more academic practices, like discussion or interaction with teachers and feedback on essays, inside the key information sets that are produced about courses, in order "to allow students and parents to judge courses by the sort of teaching

they value" (Willetts, 2013, p. 44). For the UK Coalition Government data underpins the consumerisation of the student experience and of the marketisation of the University:

> Without radical changes to how universities were financed however it was going to be difficult to change their behaviour. Now there is an opportunity to use our funding changes to push a real cultural change back towards teaching. (Willetts, 2013, p. 47)

Yet a recent report by technology consultancy Gartner (2013) made some startling predictions for information technology organisations and users for 2014 and beyond, which materially affect the assumptions and assertions that are made about data-driven university choices. These predictions question:

- The marketised organising principles that underpin how academic/student data is regulated and used;
- The labour relations that underpin employment in the increasingly digitised and stratified economies of the global North; and
- The economic utility of higher education as a positional good that is based solely on income.

In particular, Gartner focused upon the impact on labour and labour relations of technological changes linked to the digital economy, smart machines, and consumerisation. It noted the need to engage with "disruptive shifts [] coming at an accelerated pace and at a global level of impact." This impact is predicted to be deeply political and based on income and status polarisation, deteriorating labour rights, and increasing economic disenfranchisement. For instance:

> Digitization is reducing labor content of services and products in an unprecedented way, thus fundamentally changing the way remuneration is allocated across labor and capital. Long term, this makes it impossible for increasingly large groups to participate in the traditional economic system — even at lower prices — leading them to look for alternatives such as a bartering-based (sub)society, urging a return to protectionism or resurrecting initiatives like Occupy Wall Street, but on a much larger scale. Mature economies will suffer most as they don't have the population growth to increase autonomous demand nor powerful enough labor unions or political parties to (re-)allocate gains in what continues to be a global economy. (Gartner, 2013)

AQ6

The statements made by Gartner and Willetts reveal the tensions that exist between the quantitative, data-driven risk-management that pervades the higher education choice agenda, and the qualitative realities of the humane relationships that academics seek to develop with their students. Moreover, these tensions point to the possibilities for creating a cybernetic or control society based on marketised rather than socialised principles.

The Cybernetic Hypothesis connects to Marx's (1993) analysis of how the general intellect of society, or its productive skills, knowledges, and practices, was appropriated by Capital through the application of science, in order that it could be congealed inside machinery. In subsuming the practices of the labourer inside the machine, techniques, and technologies for control became crucial. Indeed mechanisation also enabled *both* the high-speed circulation of commodities to become a normatively good thing, *and* the unproductive use of time to be perceived as unethical. One outcome of this process was the use of technologies to open-up and monitor labour, including academic scholarship, in order that production processes could be systematised and made more lean or efficient. The collective Tiqqun (2001) argued that:

> [C]ybernetics is not, as we are supposed to believe, a separate sphere of the production of information and communication, a virtual space superimposed on the real world. No, it is, rather, an *autonomous world of apparatuses so blended with the capitalist project that it has become a political project*, a gigantic "abstract machine" made of binary machines run by the Empire, a new form of political sovereignty, which must be called *an abstract machine that has made itself into a global war machine*.

In the Cybernetic Hypothesis, technology has become increasingly inserted inside hierarchies of control, so that judgements about performance can be exerted instantaneously and systemic risk reduced. The overlaying of technological determinants onto societies that can be connected

through the flows of data and networks encourages a universal belief in rationality, where the only path to truth and stability is through the exchange of big data and learning analytics, rather than through co-operative judgement.

Education forms a critical terrain inside which high technology is used for control (Colman, 2012; Dyer-Witheford, 2010). This includes developing new services like learning analytics, implementing mechanisms for performance management, the use of MOOCs to crack emerging markets, drone, and surveillance-based research, and predicting futures as educational spaces become financialised through student loans and bonds (Hall, 2013; McGettigan, 2013). Thus, inside the University, economic and technological interdependence increasingly restricts human agency and the possibilities for emancipation because cybernetic rationality demands and reinforces certain digital and material behaviours, literacies, practices, attributes, and competencies. In turn, this crystallises the power of technocrats, administrators or education corporations for risk management, as well as the identification of entrepreneurial behaviours and a new governance mentality in academia (Hersch, 2010; Meiners & Quinn, 2011). Cybernetics is "not just a technological history but a history of the changing social networks that connected these technologies to the function of the state and its management" (Miller Medina, 2005, p. 17).

However, revealing the forms of cybernetic control can enable alternatives rooted in self-organisation and a societal complexity based on variety, improbability, and adaptability to emerge. For Tiqqun (2001), this demands a return to what it means to be human. A critical role for educationalists using technology inside-and-against the Cybernetic Hypothesis has been to develop educational opportunities that highlight the development of counter-narratives of Commons, co-operation, sharing, and openness, and against the separation and alienation of money, price, quality, and competition (Dyer-Witheford, 2010; Winn & Neary, 2012). As Tronti (1973, p. 105) argued, at issue is the extent to which the forms of control that pervade all of human existence can be revealed and alternatives critiqued so that "capital itself [] becomes uncovered, at a certain level of its development, as a social power." AQ7

For Cleaver (1993), the possibility for alternatives amplifies the reality of a secular crisis of capitalism, in which it is increasingly difficult for stable forms of accumulation to be reasserted, and through which class struggle is intensified.

> [T]he problem that capital faces in managing the antagonism of the working class is that of managing not only a shared (though not necessarily allied or even complementary) resistance but also diverse processes of self-constitution repeatedly escaping its rules and precipitating crisis. Capital accumulation requires that capitalist command (thesis) internalize the hostile self-activities of the working class (antithesis) and convert them into contradictions (synthesis) capable of providing dynamism to what is basically a lifeless set of rules/constraints.

At issue for educators is defining a purpose for pedagogies that are increasingly framed inside cybernetics. Is it possible to define the implementation of TEL that is against-and-beyond neoliberal forms of control? Asking this question refocuses pedagogy on the tensions between the academic and the student as abstracted, entrepreneurial individuals who are only capable of self-regulation inside a market. This market demands the production of commodities, for instance: data or learning analytics about performance; knowledge transfer or patents; and peer-reviewed outputs and forms of intellectual capital. A question is then, is it possible to use pedagogic innovation to liberate time and sociability from Capital? If so, can this be enacted co-operatively? Moreover, what is the role of techniques and technologies in rehabilitating academic labour's collective, social power?

For a co-operative pedagogy of struggle

The process of liberation demands really existing autonomy and struggle (Thorburn, 2012).

> "Autonomy" means that we make the worlds that we are grow. The Empire, armed with cybernetics, insists on autonomy for it alone, as the unitary system of the totality: it is thus forced to annihilate all autonomy whenever

> it is heterogeneous. We say that autonomy is for everyone and that the fight for autonomy has to be amplified. (Tiqqun, 2001, p. 51)

Critical in this fight for autonomy is uncovering the way in which technologies are used to reinforce power, and revealing how those same technologies might be used for alternative purposes. At issue are the organising principles through which technologies are deployed. Thus, Miller Medina (2005, p. 22), attempting to recover the governing principles in President Allende's Chile from 1964 to 1973, argued that "This history, therefore, is not just a technological history but a history of the changing social networks that connected these technologies to the function of the state and its management." Moreover, the deployment of technologies throughout Chilean institutions "helped solidify a particular articulation of the state that was supported by new claims to legitimate power" (Miller Medina, 2005, p. 96). These new claims were not the co-option of institutions, technologies, and techniques for Capital, but were "revolutionary because we are making a deliberate effort to hand to the people the power that science commands, in a form in which the people can themselves use it" (Allende, quoted in Miller Medina, 2005, p. 252).

The possibility of using technology through a co-operative, pedagogic project is also central to The Republic of Ecuador's (2009) *National plan for good living 2009–2013: Building a plurinational and intercultural state*. The Ecuadorian Government argues for five interconnected revolutions: democratic; ethical; economic; social; and Latin American dignity; in order to build a fraternal and co-operative coexistence. In part, this is based on "The transformation of higher education and the transfer of knowledge in science, technology and innovation," because

> The combination of ancestral forms of knowledge with state-of-the-art technology can reverse the current development model and contribute to the transition towards a model of accumulation based on bio-knowledge.

This aim of linking environmental to historical and cultural knowledge through a democratic agenda based on equality, is further realised in Ecuador's announcement that Michael Bauwens of the Peer-to-Peer Foundation will join

> a major strategic research project to "fundamentally re-imagine Ecuador" based on the principles of open networks, peer production and commoning … The project seeks to "remake the roots of Ecuador's economy, setting off a transition into a society of free and open knowledge" (Bollier, 2013).

AQ8

These re-imaginings, based on principles of association and mutualism, and connecting technologies and techniques to ethical and ancestral knowledge production, provide a rich-vein of alternative stories. As Lebowitz (2005) notes, for Venezuela there are new possibilities where such stories are predicated upon the interests of a whole society and not those in power. In creating these narratives, educators might find pedagogies that enable critiques of private property, the exploitation of labour, and of production solely for profit. Part of this pedagogic renewal demands a focus on social property, on forms of social production organised by workers, and of production for the needs of communities. This might usefully be transferred into institutional pedagogic practices and innovations related to TEL, in terms of co-management of both the University itself and the curriculum. *Pace* Lebowitz (2005), one might argue

> Co-management implies a particular kind of partnership – a partnership between the workers of an enterprise [University] and society. Thus, it stresses that enterprises [universities] do not belong to the workers alone – they are meant to be operated in the interest of the whole society. In other words, co-management is not intended only to remove the self-interested capitalist [administrator], leaving in place self-interested workers [academics]; rather, it is also meant to change the purpose of productive activity. It means the effort to find ways both to allow for the development of the full potential of workers [academics and students] and also for every member of society, all working people, to be the beneficiaries of co-management.

Thus, in the face of the neoliberal refrain of markets, enterprise, and mobility, communities need new ways to exit the drive to compete with transnationally mobile capital, and instead to define new methods of academic work and life. This includes critiques of the role of the University in supporting those communities and societies that wish to widen their own field of opportunity and inscribe

sustainable alternatives. Moreover it also includes the deployment of TEL for social and co-operative ends.

For de Peuter and Dyer Witheford (2010) this means that we might refocus the core institutions of everyday life around "an *organizational commons*, [where] the labour performed is a *commoning practice,* and the surplus generated, a *commonwealth*." They argue for "an acknowledgement of the contribution to collective productivity of every life" and forms of "self-organised associated labour" that can enable a circulation of the commons and the value of commoning. Outing the dynamics of individuated competition and restating the possibilities of association, solidarity and alliance are key to the definition of a co-operative, technology-rich University that is inside-against-and-beyond the competitive ethos that drives the neoliberal, entrepreneurial University. As Cleaver (1993) notes:

> "Competition" has become a prominent slogan of domination in this period of international capitalist restructuring — one used to pit workers against workers. We need to defetishize its meaning by showing how it is merely a particular way of organizing the class struggle. Within the context of Marxist crisis theory we need to do the same and relocate competition within the class struggle rather than outside it … we should substitute the politics of alliance for the replacement of capitalism by a diversity of social projects. A politics of alliance against capital to be conducted not only to accelerate the circulation of struggle from sector to sector of the class, but to do so in such a manner as to build a post-capitalist politics of difference without antagonism.

The purpose of the co-operative University, structured around associational democracy, is to create and liberate forms of space-time (commons, co-operatives, clubs, social centres, communes) that enable human beings to distinguish between the techniques employed by Capital for valorisation, and to direct their attacks, not against these material instruments of production, but against the mode in which they are used (cf. Marx, 2004, p. 554). Moreover, the associational and democratic organising principles of such a co-operative University need to be predicated on alliance and solidarity with other educational and non-educational forms of resistance. Thus, technology and TEL is central to this pedagogic project, by enabling the social and technological forces of academic production to be reconstituted co-operatively. As Clarke (1994) argues, revolutionary change is predicated on the self-organisation of the direct producers and their ability to abolish the production of commodities based on capitalist social relationships.

Defining the associational and democratic organising principles of such a co-operative University forms the task of refusing and pushing-back against neoliberal enclosure of the realities of University life. This is not to recuperate an ideal of the University against the historical realities of capitalism. It is to recuperate the ideas of association, solidarity, and alliance, in order to liberate spaces and times for social co-operation and co-operating. One of the questions for radical academics is how to utilise technologies, in order to bring alive the co-operative, participatory histories, and traditions that have existed, and to define possible alternatives. These examples might include critiques of the following.

- The governance principles that underpin the responses of the Co-operative movement to the crisis, not in order to re-establish business-as-usual, but to demonstrate actually existing co-operative, social production. This production is technologically mediated and rooted in education at the level of society (European Parliament, 2013).
- The transnational nature of the co-operatives movement, and the importance of associational democracy in educational production and consumption. How might these associational networks enable organic intellectuals to emerge from groups of educators and students, and new ideas to take root against hegemony? (La Fédération Nationale, 2013).
- The situated, local importance of community co-operative learning trusts as networks of mutual support, like The Burton Co-operative Learning Trust (2013) or the Cornwall schools co-operative (The Schools Co-operative Society, 2013). Is it possible to use such co-operatives to challenge, occupy, and reinvent ideas of impact, observation, performance management, gifted-and-talented, school improvement etc.? How might extended partnerships of young people, providers,

educators, academics, businesses, parents, work in peer-support groups and wider networks to refuse to be subject to competition?

Developing such critical positions enables a reflection on the key arguments outlined above about the interrelationships between technology and academic practices inside the University. These relationships can usefully be analysed with reference to critical political economy, and especially the use of technology for valorisation, including:

- innovation and organisational development as a function of competitive advantage;
- the disciplining of academic labour through techniques for productivity and efficiency;
- the transnational demand to open-up higher education through financialisation and marketisation; and
- the data-driven privatisation of components of the curriculum and the student experience.

The enclosure of the University under neoliberalism by transnational activist networks is one critical form of dispossession. This has tended to overwhelm academic autonomy, in order to facilitate the accumulation of value. The argument herewith has been that such forms of dispossession might be analysed historically and materially through critical theory, and that such an analysis enables technological innovations to be situated politically against class struggles for autonomy. This is important in the current phase of neoliberal roll-out, precisely because the co-option of the labour of academics and students is increasingly visible. It is important to note that at the same time, the ruptures caused by academic struggle inside and outside formal higher education have also become visible.

As has been argued above, central to this process of struggle is the recognition that co-operative organising principles, both for the University and for the curriculum, might offer a set of alternatives to the prevailing political economy of higher education. In particular co-operative re-imaginings connect to the idea of social relationships that are forged across a global commons. This idea pushes back against artificially imposed, immaterial scarcity, and instead offers a space to reconsider social relationships that are rooted in an abundance of humane values.

At issue in developing these co-operative spaces and their narratives is whether interconnected actions, which demonstrate the solidarity of liberation, can form a meaningful pedagogic project. In turn, can such a project form a lived social critique of capitalism that offers an alternative vision for society? In educational terms this then questions whether there are other co-operative governing principles for universities or for higher education at the level of society. A secondary question is how TEL is used to reinforce or push-back against alienating social norms. This demands that we ask what education is, before we ask what it is for, and that TEL forms a process of becoming that refuses marketisation, abstraction, and control.

Conclusion

One part of this approach to liberation is to think about mechanisms that disrupt the circuits and production of Capital as a social system. These may include renewing Ball's (2012) neoliberal factors co-operatively, and in relation to TEL.

- How can educational technologies be used to reinforce the sociability of everyday life, in order to realise new opportunities for pedagogic co-operation and against value?
- Can technologies and TEL be used to reconfigure educational and curriculum governance through an appeal to the co-operating Self, with the public and the mutual at its heart?
- Can educational co-operatives use technologies and techniques like cybernetics to act transnationally in association and mutuality, and to define alternative value-forms that are against the logic of the market?

- Can educators activate waves of co-operation that are: proto (revealing the intellectual project of the socio-cultural histories of co-operatives); roll-back (of neoliberalism); and roll-out (of new co-operative forms, modes of governance and regulation)?
- Can educators and students create mutual and associational structures that are polymorphic and isomorphic?

In this process educators might reduce their abstraction through TEL, and witness new forms of technologically mediated sociability based upon co-operating, rather than co-option. A different way of connecting TEL beyond the market may enable a refusal of the neoliberal pedagogic project of abstraction and individuation. In critiquing the relationships between the individual and the State-market duality, Foucault argued that,

> [social] relationships take the form of a multiplicity of often minor processes, of different origin and scattered location across and beyond the state. These overlap, repeat, or imitate one another according to their domain of application, they converge and gradually produce the blueprint of a general method.

The question is whether co-operatively defined TEL might enable spaces and times (or space-times) for life to be lived as an associational, mutual, transitional process, rather than as an outcomes-based blueprint (Foucault, 1975, p. 138).

Here the governance of the University as a form of self-organising associated labour is critical. Academic labour needs to create sustainable forms of opposition and alternatives, *both* in the face of the politics of austerity and dispossession, *and* more long term, in the face of the crisis of accumulation. Alternative possibilities exist that are framed historically and culturally, for the description of both the University and TEL as a public good that helps to legitimise and reterritorialise communal forms of social production. The question for educators and students is on what basis might the University utilise TEL as co-operative endeavour help to liberate those communities from the corporate power-over them?

Disclosure statement

No potential conflict of interest was reported by the author.

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References

Ball, S. J. (2012). *Global Education Inc. New policy networks and the neo-liberal imaginary*. London: Routledge.

Basu, D., & Vasudevan, R. (2011). *Technology, distribution and the rate of profit in the US economy: Understanding the current crisis*. Unpublished manuscript. Retrieved from http://bit.ly/pkqAhu

Bollier, D. (2013). *Bauwens joins Ecuador in planning a commons-based, peer production economy*. Retrieved from http://bit.ly/1aRVMPU

The Burton Co-operative Learning Trust. (2013). Retrieved from http://bit.ly/16Qpxhd

Clarke, S. (1979). The value of value. *Capital and Class*, *10*, 1–17.

AQ9

Clarke, S. (1990). The Marxist theory of crisis. *Science and Society*, *54*(4), 442–467.
Clarke, S. (1994). *Marx's theory of crisis*. Basingstoke: Macmillan Press.
Cleaver, H. (1993). *Theses on secular crisis in capitalism: The insurpassability of class antagonisms*. Retrieved from http://bit.ly/10ASDy4
Colman, G. (2012). Our weirdness is free. *Triple Canopy*, p. 15. Retrieved from http://bit.ly/Annkth
Deem, R., Hillyard, S., & Reed, M. (Eds.). (2007). *Knowledge, education and new managerialism*. Oxford: Oxford University Press.
Deem, R., Mok, K. J., & Lucas, L. (2008). Transforming higher education in whose image? Exploring the concept of the 'world class' university in Europe and Asia. *Higher Education Policy*, *21*, 83–97.
Dyer-Witheford, N. (2010). Digital labour, species-becoming and the global worker. *Ephemera: Theory and Politics in Organization*, *10*(3/4), 484–503. Retrieved from http://bit.ly/HdAz8U
Dyer Witheford, N., & de Peuter, G. (2009). *Games of empire: Global capitalism and video games*. Minnesota: University of Minnesota Press.
EduFactory. (2012). *Edufactory*. Retrieved from http://bit.ly/aGWzY5
European Parliament. (2013). *Draft report on the contribution of cooperatives to overcoming the crisis*. Retrieved from http://bit.ly/1f1Jcix
Foucault, M. (1975). *Discipline and punish: The birth of the prison*. New York, NY: Vintage Books.
Gartner. (2013). *Gartner reveals top predictions for IT organizations and users for 2014 and beyond*. Retrieved from http://gtnr.it/17RLm2v
Gove, M. (2012). *Speech at the BETT show 2012*. Retrieved from http://bit.ly/w0FNvW
Hall, R. (2012). *On the solidarity of openness: The current and future state of higher education*. Retrieved from http://bit.ly/R608Lb
Hall, R. (2013). Educational technology and the enclosure of academic labour inside public higher education. *The Journal for Critical Education Policy Studies*, *11*(3), 52–82. Retrieved from http://bit.ly/14BocaV
Harvey, D. (2005). *A brief history of neoliberalism*. Oxford: Oxford University Press.
Harvey, D. (2010). *The enigma of capital: And the crises of capitalism*. Oxford: Oxford University Press.
Hersch, M. A. (2010). *Military research: Ethics, values, and academic freedom*. Unpublished manuscript. Retrieved from http://bit.ly/LFOzDL
Hoofd, I. M. (2010). The accelerated university: Activist academic alliances and the simulation of thought. *Ephemera: Theory and Politics in Organization*, *10*(1), 7–24. Retrieved from http://bit.ly/1aR0o6f
Institute for Fiscal Studies. (2010). *Higher education reforms: Progressive but complicated with an unwelcome incentive*. Retrieved from http://bit.ly/g2xGtN
Klein, N. (2007). *The shock doctrine: The rise of disaster capitalism*. London: Penguin.
La Fédération Nationale. (2013). *Ressources pédagogiques*. Retrieved from http://bit.ly/1aEzYYB
Lebowitz, M. A. (2005). Constructing co-management in Venezuela: Contradictions along the path. *Monthly Review Zine*. Retrieved from http://bit.ly/1awBnOF
Lipman, P. (2009). Neoliberal education restructuring: Dangers and opportunities of the present crisis. *Monthly Review*, *63*(3). Retrieved from http://bit.ly/qDl6sV
Marx, K. (1993). *Grundrisse. Foundations of the critique of political economy*. London: Penguin.
Marx, K. (2004). *Capital, volume 1: A critique of political economy*. London: Penguin.
McGettigan, A. (2012). Who let the dogs out? The privatization of higher education. *Radical Philosophy*, *174*, 22–27. Retrieved from http://bit.ly/MBrIhH
McGettigan, A. (2013). *The Great University Gamble: Money, markets and the future of higher education*. London: Pluto Press.
Meiners, E. R., & Quinn, T. (2011). Militarism and education normal. *Monthly Review*, *63*(3). Retrieved from http://bit.ly/Phtv9B
Miller Medina, J. E. (2005). *The state machine: Politics, ideology, and computation in Chile, 1964–1973* (Unpublished doctoral dissertation). Massachusetts Institute of Technology. Retrieved from http://bit.ly/aeVNE0
Neary, M. (2012). Teaching politically: Policy, pedagogy and the New European University. *The Journal for Critical Education Policy Studies*, *10*(2), 233–257. Retrieved from http://bit.ly/Ht1eyh
Neary, M., & Winn, J. (2012). Open education: Common(s), communism and the new common wealth. *Ephemera: Theory and Politics in Organization*, *12*(4), 406–422. Retrieved from http://bit.ly/17tksMe
Newfield, C. (2010). The structure and silence of Cognitariat. *EduFactory Webjournal*, *0*, 10–26. Retrieved from http://bit.ly/bh36lZ
Newfield, C. (2013). Corporate open source: Intellectual property and the struggle over value. *Radical Philosophy*, 181. Retrieved from http://bit.ly/15sGMt1
de Peuter, G., & Dyer Witheford, N. (2010). Commons and cooperatives. *Affinities: A Journal of Radical Theory, Culture, and Action*, *4*(1). Retrieved from http://bit.ly/Ve2cE9
Postone, M. (2005). Critical social theory and the contemporary world. *International Journal of Politics, Culture and Society*, *19*(*1–2*), 69–79.
Ravitch, D. (2012). *The Pearsonizing of the American mind*. Retrieved from http://bit.ly/NE1LvB

AQ10
AQ11

Robinson, W. I. (2004). *A theory of global capitalism. Production, class, and state in a transnational world*. Baltimore, MD: The Johns Hopkins University Press.
Roggero, G. (2011). *The production of living knowledge: The crisis of the university and the transformation of labor in Europe and North America*. Philadelphia, PA: Temple University Press.
Siemens, G. (2012). *Learning analytics: Envisioning a research discipline and a domain of practice*. Unpublished manuscript. Retrieved from http://bit.ly/MdMPES
The Republic of Ecuador. (2009). *National plan for good living 2009–2013: Building a plurinational and intercultural state*. Retrieved from http://bit.ly/GQJi0M
The Schools Co-operative Society. (2013). *Largest educational co-operative in the UK, formed in Cornwall*. Retrieved from http://bit.ly/123gwlb
Thorburn, E. (2012). *Actually existing autonomy and the brave new world of higher education*. Occupied Studies. Retrieved from http://bit.ly/xzcPRO
Tiqqun. (2001). *The cybernetic hypothesis*. Retrieved from http://bit.ly/TxJCm1
Tronti, M. (1973). Social capital. *Telos*, *17*, 98–121.
Wendling, A. E. (2009). *Karl Marx on technology and alienation*. London: Palgrave Macmillan.
Willetts, D. (2013). *Robbins revisited. Bigger and better higher education*. London: Social Market Foundation. Retrieved from http://bit.ly/17DB56B
Williams, J. J. (2012). *Deconstructing academe: The birth of critical university studies*. Retrieved from http://bit.ly/ywGQTM
Winn, J. (2013). *Helplessness*. Retrieved from http://bit.ly/1cJ7MSo